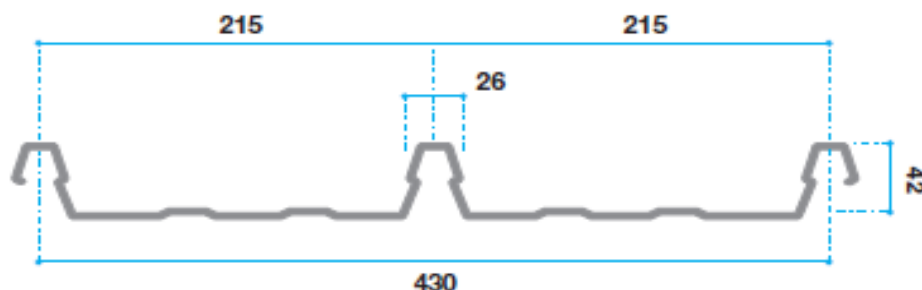


## **SUGGESTED SPECIFICATION FOR M-CLIPP 430 ROOFING/WALLING PROFILE**

### **Profile and Dimension**

## **M-Clipp 430**



### **Physical Properties of M-Clipp 430**

Steel Grade (MPa)	Cover Width (mm)	Rib Height (mm)	Total Coated Thickness (mm)		Minimum Recommended Pitch
			Standard	Non-Standard	
550	430	42	0.54	0.66	2°

Note: Minimum recommended roof pitch is 2° for single length roof sheet without end-lap. For long length roofing sheets exceeding local regulatory limitation on transportation, on-site roll-forming is available on request. For more information, please refer to M Metal – Marketing Department.

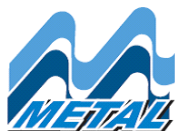
### **Material**

Where shown in the Drawings, the metal roof shall be 0.48mm BMT (Base Metal Thickness) or 0.54mm TCT (Total Coated Thickness) ColorLume® PVDF (70/30) factory pre-painted coated steel M-Clipp 430 clip-on conceal-fixed roof system.

The profile shall have ribs of 42mm height spaced at 215mm centres and an effective cover width of 430mm to be supplied complete with conceal fixing clips ML-70 as manufactured by M Metal Pte Ltd. The finish colour shall be for one side and be selected by the Architect/SO.

The base material shall be protected steel sheet with a minimum yield stress of 550MPa (Grade G550) and metallic hot-dipped zinc/aluminium alloy coating comprising 55% Aluminium, 43.5% Zinc and 1.5% Silicon. The minimum total coating mass for the zinc/aluminium alloy coated steel shall be AZ200 (200 g/m<sup>2</sup> minimum coating mass).

The material performance intended for the manufacture of the profiled roof and wall cladding for use in the building industry shall conform to Singapore Standard 370:1994 Specification for Metal Roofing.



## **Material Performance Test**

<b>Typical Properties</b>	<b>Test Standards (Method)</b>	<b>Correspond to Singapore Standard SS370:1994*</b>
T-bend Test	ASTM D 4145-10	AS 2728
Pencil Hardness	ASTM D 336-09e2	ASTM D 3363
Colour	ASTM D 2244-11	SS Part E3
Specular Gloss	ASTM D 523-08	SS 5 Part E1
Dry Film Thickness	ASTM D 7091-05	SS 5 Part B1
Impact Resistance	JIS K5600-5-3	ISO 6272
Humidity Resistance	JIS K5600-7-2	SS 5 Part G6
Gross Cut Adhesion	JIS K5600-5-6	ISO 2409

<b>Corrosion &amp; Weathering</b>	<b>Test Standards (Method)</b>	<b>Correspond to Singapore Standard SS370:1994*</b>
Salt Spray Test	ASTM B 117-090	SS 5 Part G1
Weathering Test	ASTM 154-06	SS Part G4
Acid Resistance (10% v/v HCL)	JIS K5600-6-1	ISO 2812

\* Specification for Metal Roofing – Singapore Environment.

All necessary related flashings, cappings and others as per shape and profile as shown in the Drawings shall be manufactured from 0.61mm thick Colorlume® VF-20L PVDF (70/30) factory pre-painted coils as per colour of roof selected by the Architect/SO.

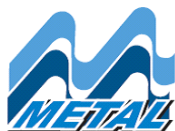
All works shall be fixed in a workman like manner, leaving the job clean and weather-tight. All debris (nuts, screws, cuttings, fillings etc.) shall be cleaned off daily.

## **Paint Finish**

The top coat finish shall be ColorLume® VF-20L PVDF (Fluorocarbon) factory pre-painted 2-coat / 2-bake high performance Polyvinylidene Fluoride with more than 70% of KYNAR 500® or HYLAR 5000® paint system.

The coating composition is as follows:

- Top coat: Polyvinylidene Fluoride (PVDF) with more than 70% KYNAR 500® or HYLAR 5000® paint system of 20µm nominal dry film thickness on the top or weather side. The finish colour shall be selected by the Architect/SO.
- Primer coat: High anti-corrosion inhibitive polyurethane primer of 5µm dry film thickness each on both sides.
- Back coat: Light grey epoxy resin with anti-corrosion polyester coat of 10µm nominal dry film thickness.
- Gloss: Nominal gloss level of 25 - 30% at 60 degree reflection angle.



## DESIGN PERFORMANCE

### Maximum Support Spacing

Type of Span	Base Metal Thickness
	0.48mm (Standard)
<b>Roof (mm)</b>	
Single Span	1600
End Span	1900
Internal Span	2200
Unstiffened Overhang	150
<b>Wall (mm)</b>	
Single Span	2200
End Span	2300
Internal Span	2300
Overhang	300

These numbers represent the maximum span that can be achieved for foot traffic and have no relationship with capacity to withstand resistance to wind uplift.

### Limit State Wind Pressure Capacity – kPa

<b>M-Clipp 430 – 0.48mm BMT (Base Metal Thickness)</b>										
Span Type		Span (centre to centre) - mm								
		900	1200	1500	1800	2100	2400	2700	3000	3300
Single	Serviceability	2.40	2.20	1.90	1.60	1.40	1.10	0.80	0.60	-
	Strength*	4.60	4.10	3.70	3.40	3.00	2.50	1.90	1.40	-
End	Serviceability	2.20	2.00	1.80	1.60	1.50	1.30	1.20	1.10	0.90
	Strength*	3.30	3.10	3.00	2.80	2.50	2.10	1.80	1.50	1.30
Internal	Serviceability	2.60	2.50	2.40	2.30	2.10	1.90	1.60	1.50	1.40
	Strength*	3.70	3.20	2.80	2.40	2.10	1.90	1.60	1.50	1.40

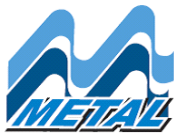
\* Reduction factor of 0.90 has been applied. These capacities are based on tests carried out by the Cyclone Testing Station of James Cook University and in accordance with the requirements of Australian Standard AS 1562.2-1992 Resistance to wind Pressure for Non-cyclonic Regions.

## MISCELLANEOUS

### Fasteners

Fasteners shall be selected to match the life expectancy and be compatible with the roof and wall cladding material.

The fasteners used for installation of M-Clipp 430 sheeting to the purlin/structural supports shall conform to AS3566 – Class 3 or Class 4 where relevant and shall be self-drilling type with wafer head.



### **Compatibility**

All products need to be checked for compatibility with adjacent materials before installation. It is important to check implications of direct contact between materials and also water runs from one material to another.

Zinc/Aluminium (non-colour)/ColorLume<sup>®</sup> VF-20L (70/30) PVDF coated steel sheet shall not have direct contact with copper, lead, green or treated timber, stainless steel and mortar or concrete.

### **Length**

M-Clipp 430 roof and wall claddings are supplied cut-to-length. When designing, do keep in mind regulatory limits of local transport authority for transportation of long length products. The manufacturing tolerance on the length of product supplied is  $\pm 0.15$ mm.

### **Handling/Storage**

M-Clipp 430 cladding should be handled with care at all times to preserve quality of its finish and product capabilities. Packs should be stored above ground on site and be kept dry.

### **WARRANTY**

10 years with terms and conditions specified in manufacturer's warranty specimen.

### **Note:**

Where **M-Clipp 430** is selected as the intended roof profile together with insulation materials to complete the build-up roof system, please refer to M Metal Pte Ltd - Marketing Department to discuss on the technical application where acoustic and thermal properties are required and a detailed specification write-up and shop drawings of the build-up roof system will be prepared for the specific project.